

**Electromagnetically Opaque
Sleeve
Approval and Test Procedure**
VERSION 13.1.0



FIPS 201 EVALUATION PROGRAM

February 20, 2014

Office of Governmentwide Policy
Office of Technology Strategy
Identity Management Division
Washington, DC 20405

Sleeve Approval Procedure Document History

Status	Version	Date	Comment	Audience
Draft	0.0.1	03/20/06	Document creation	Limited
Draft	0.1.0	03/20/06	Submitted to GSA for approval.	Limited
Draft	0.1.1	03/24/06	Updated based on feedback from GSA	Limited
Draft	0.2.0	03/24/06	Submitted to GSA for approval	GSA
Draft	0.2.1	04/05/06	Updated based on feedback from EPTWG	Limited
Draft	0.3.0	04/05/06	Submitted to GSA for approval	GSA
Approved	1.0.0	04/07/06	Approved by GSA	Public
Revision	1.0.1	06/29/06	Updated based on feedback from GSA	Limited
Revision	1.1.0	06/29/06	Submitted to GSA for approval	GSA
Revision	1.1.1	06/30/06	Updated based on feedback from GSA	Limited
Revision	1.2.0	06/30/06	Submitted to GSA for approval	GSA
Approved	2.0.0	06/30/06	Approved by GSA	Public
Revision	2.0.1	08/21/06	Updated based on feedback from GSA.	Limited
Revision	2.1.0	08/21/06	Submitted to GSA for Approval	Limited
Approved	3.0.0	09/08/06	Approved by GSA	Public
Approved	4.0.0	02/09/07	Updated to include process for product updates, resubmissions and evaluation fees	Public
Approved	5.0.0	04/02/07	Updated with details for the evaluation fees.	Public
Approved	6.0.0	04/26/07	Updated with details for the upgrade process.	Public
Approved	7.0.0	10/31/07	Updated to split approval processes from document. Processes can now be found in Suppliers Handbook.	Public
Approved	8.0.0	04/07/08	Updated category description.	Public
Approved	9.0.0	05/12/08	Updated SLV.1 and Section 3.3.1.1	Public
Approved	10.0.0	8/13/08	Updated category description and added SLV.2	Public
Approved	11.0.0	05/29/09	Updated SLV.1 VTDR Test Scenario	Public
Approved	12.0.0	10/18/11	Added requirement and new VDR procedure to clarify usage boundaries for this FIPS 201 EP Product Category	Public
Approved	12.1.0	03/07/12	Revised Approval Procedure to differentiate between products used for visual display of card information within Federal and Government-sponsored facilities and products used for transport between such facilities	Public
Revision	13.0.0	12/17/13	Removed requirement in Lab Test Data Report for testing of material in anechoic chamber. Combined Test Procedure and Approval Procedure in single document. Revised test procedure to include multiple orientations and a new reader for testing.	Public
Revision	13.1.0	02/20/14	Removed test fixture tool from test procedure.	Public

Table of Contents

1	Electromagnetically Opaque Sleeve Approval Procedure	1
1.1	Overview.....	1
1.2	Category Description	1
1.3	Purpose.....	1
2	Application Package Contents	2
3	Evaluation Procedure for Electromagnetically Opaque Sleeve.....	2
3.1	Requirements	2
3.2	Approval Mechanism Matrix.....	3
3.3	Evaluation Criteria.....	4
3.3.1	Vendor Test Data Report	4
3.3.2	Lab Test Data Report	4
3.3.3	Vendor Documentation Review.....	4
3.3.4	Attestation.....	5
4	Electromagnetically Opaque Sleeve Test Procedure	5
4.1	Requirements	5
4.2	Test Components	6
4.3	Test Cases	6
4.3.1	Test Case SLV-TP.1	6
4.3.1.1	Purpose.....	6
4.3.1.2	Test Setup	7
4.3.1.3	Test Process	8

List of Tables

Table 1 - Applicable Requirements	3
Table 2 - Approval Mechanism Matrix	4
Table 3 – Test Procedure: Applicable Requirements	6
Table 4 - Test Procedure: Components.....	6

List of Figures

Figure 1 - Configuration Diagram for Test Case SLV-TP.1	7
---	---

1 Electromagnetically Opaque Sleeve Approval Procedure

1.1 Overview

The FIPS 201 Evaluation Program (EP) is a U.S. Government entity administered by the Office of Government-wide Policy (OGP), within the General Services Administration (GSA) agency. The goal of the FIPS 201 Evaluation Program (EP) is to evaluate products and services against the requirements outlined in FIPS 201 and its supporting documents. In addition to derived test requirements developed to test conformance to the National Institute of Standards and Technology (NIST) Standard, GSA has also established interoperability and performance metrics to further determine product suitability. A set of approval and test procedures have been developed which outline the evaluation criteria, approval mechanisms and test process employed by the Laboratory during their evaluation of a Supplier's product or service against the requirements for that category.

A Supplier desiring to submit an Electromagnetically Opaque Sleeve (hereafter referred to as the Product) for evaluation must follow the Suppliers Policies and Procedures Handbook. In addition to this handbook, a Supplier also needs to refer to this Approval Procedure, which provides the necessary category-specific details in order to have a Supplier's Product evaluated by the EP and placed on the Approved Products List (APL).

1.2 Category Description

The *Electromagnetically Opaque Sleeve* is a hardware device whose primary function is to protect information stored on the card against skimming attacks across the contactless interface, regardless of the orientation of the PIV Card in the device. It does so by shielding the contactless interface and blocking communication to the card across it. PIV cardholders may be issued an Electromagnetically Opaque Sleeve at the time of PIV issuance or at another time. Use of such a sleeve is optional in the most current version of the FIPS 201 standard (FIPS 201-2).

- a. Two different types of sleeves exist, namely Display sleeves, and Transport sleeves. The primary purpose of each sleeve type is to safeguard the inserted PIV cards from skimming attacks, however the two types of sleeve differ as described below: Display Sleeves: This type of sleeve supports the visual display and readability of printed information on the front of the PIV Card while its cardholder is within Federal or other Government-sponsored facilities as directed under HSPD-12 and OMB Memorandum 05-24, while protecting the PIV Card container against unauthorized skimming attacks information at all times. Such a Product shall be designated as an *Electromagnetically Opaque Sleeve (Display)*.
- b. Transport Sleeves: This type of sleeve supports the secure transport of the inserted PIV card between Federal/other Government-sponsored facilities while protecting the PIV Card container information at all times. This product generally does not support the visual display and readability of any printed information on the inserted PIV Card. Such a Product shall be designated as an *Electromagnetically Opaque Sleeve (Transport)*.

1.3 Purpose

The purpose of this document is to provide the following information:

- (i) Provide a list of the artifacts and/or documentation that needs to be submitted to the Evaluation Lab as part of the application package submission.
- (ii) Document the list of the requirements that apply to this category.
- (iii) Specify the evaluation criteria along with their approval mechanisms that will be used by Evaluation Labs to verify compliance of the Product against the requirements that apply to this category.

2 Application Package Contents

The Application Package Contents include the artifacts, documentation and in some cases the product itself that needs to be submitted to the Evaluation Lab so that evaluation can be performed. The Application Package Contents for this category include the following:

- The Product itself. This should be delivered to the Lab (address can be found at <http://www.idmanagement.gov/labs>) using a reliable method of delivery (e.g., FedEx, UPS, hand delivery);
- Completed Application Form, provided on the Evaluation Program website. (This form will be available through the web interface once users have been assigned a login credential);
- Completed and signed Lab Service Agreement (found in the application submission package ZIP file). The Lab Service Agreement should be completed and scanned into a document to be uploaded to Evaluation Program website;
- Completed and signed Attestation Form (found in the application submission package ZIP file). The Attestation Form should be completed and scanned into a document to be uploaded to Evaluation Program website;

3 Evaluation Procedure for Electromagnetically Opaque Sleeve

3.1 Requirements

In order to approve the Product as conformant to the requirements of PIV, it at a minimum, must comply with the first two requirements listed below (SLV.1 and SLV.2). Further, to qualify as an *Electromagnetically Opaque Sleeve (Display)* Product, it must also satisfy the third requirement listed below (SLV.3). The approval mechanism column describes the technique utilized by the Lab to evaluate compliance to that particular requirement.

Identifier #	Requirement Description	Source	Req. #	Approval Mechanism
SLV.1	Agencies may choose to deploy PIV Cards with electromagnetically opaque holders or other technology to protect against any unauthorized contactless access to information stored on a PIV Card.	FIPS 201-2, Section 2.11	1.1-145	Lab Test Data Report
SLV.2	The primary function of the sleeve is to provide a housing for the PIV Card only and protect the information stored on a contactless IC from unauthorized access.	Derived	N/A	Vendor Documentation Review
SLV.3	The sleeve shall permit the visual display of printed information contained on the front of the PIV Card.	Derived from OMB M05-24	N/A	Vendor Documentation Review

Table 1 - Applicable Requirements

Requirements SLV.1, SLV.2 and SLV.3 must be met by Products seeking FIPS 201 Approval as an *Electromagnetically Opaque Sleeve (Display)* product.

Requirements SLV.1 and SLV.2 must be met by Products seeking FIPS 201 Approval as an *Electromagnetically Opaque Sleeve (Transport)*.

3.2 Approval Mechanism Matrix

The table below provides an indication of the total number of requirements applicable for the Product and provides a breakdown of how the evaluation will be conducted based on the different approval mechanisms available to the Lab.

Total Requirements	Approval Mechanisms – <i>Electromagnetically Opaque Sleeve (Transport)</i>					
	SV	VTDR	LTDR	VDR	C	A
2	N/A	N/A	1	1	N/A	2
Total Requirements	Approval Mechanisms – <i>Electromagnetically Opaque Sleeve (Display)</i>					
	SV	VTDR	LTDR	VDR	C	A
3	N/A	N/A	1	2	N/A	3

<p>Legend: SV – Site Visit; VTDR – Vendor Test Data Report; LTDR – Lab Test Data Report; VDR – Vendor Doc. Review; C – Certification; A - Attestation</p>

Table 2 - Approval Mechanism Matrix

3.3 Evaluation Criteria

This section provides details on the process employed by the Lab for evaluating the Product against the requirements enumerated above.

3.3.1 Vendor Test Data Report

No Vendor Test Data Report is required.

3.3.2 Lab Test Data Report

Reference(s):	SLV.1
Test Procedure:	1. The Lab will execute test procedures for this category in accordance with the Test Procedure in Section 4.
Expected Results:	The Product passes all the tests performed by the Lab in accordance with the Test Procedure.

3.3.3 Vendor Documentation Review

Reference(s):	SLV.2, SLV.3
Evaluation Procedure:	<p>1. The Lab will review documentation submitted by the Supplier to determine if:</p> <ul style="list-style-type: none"> • The Product’s Primary function is to house the PIV Card only and protect the information stored on the card against skimming attacks across the contactless interface. • The Product permits the visual display of the printed information on the front of a PIV Card while within the sleeve. The Product must meet this requirement to be approved as an <i>Electromagnetically Opaque Sleeve (Display)</i> product; a product not meeting this requirement may still be approved as an <i>Electromagnetically Opaque Sleeve (Transport)</i>. • The Product provides an attachment point that can be used to display the PIV Card via a clip, neck strap, or other method. The Product must meet this requirement to be approved as an <i>Electromagnetically Opaque Sleeve (Display)</i> product; a product not meeting this requirement may still be approved as an <i>Electromagnetically Opaque Sleeve (Transport)</i>.
Expected Results:	<p>Either:</p> <ul style="list-style-type: none"> a. Submitted documentation demonstrates that Product meets requirements SLV.2 and SLV.3 as an <i>Electromagnetically Opaque Sleeve (Display)</i>.

Reference(s):	SLV.2, SLV.3
	b. Submitted documentation demonstrates that Product meets requirement SLV.2 as an <i>Electromagnetically Opaque Sleeve (Transport)</i> .

3.3.4 Attestation

Reference(s):	N/A
Evaluation Procedure:	1. Review the Attestation Form provided by the Supplier, confirming that the Product to the best of their knowledge, conforms to all the necessary requirements of the category under which the Product applies. Verify that the person signing this Attestation Form has the authority to do so (a minimum “C” level [e.g. CSO, CEO, CIO, CFO, Vice-President, President, Business Partner or Owner]).
Expected Results:	The Attestation Form has been signed by an authorized individual (e.g. CSO, CEO, CIO, CFO, Vice-President, President, Business Partner or Owner).

4 Electromagnetically Opaque Sleeve Test Procedure

This section document provides the detailed test procedure that needs to be executed by the Lab in order to evaluate the Electromagnetically Opaque Sleeve (henceforth referred to as the Product) against the subset of applicable requirements that need to be electronically tested for this category. Please note that conformance to the tests specified in this document will not result in the Product being compliant to the applicable requirements of FIPS 201. The Product must undergo an evaluation using all the evaluation criteria listed for that category prior to being deemed as compliant. Only products that have successfully completed the entire Approval Process will be designated as conformant to the Standard.

A Lab Engineer follows the steps outlined below in order to test those requirements that have been identified to be electronically tested. The end result is a compilation of the observed behavior of the Product in the Lab Test Data Report.

Section 3 provides the test procedures that need to be executed for evaluating the Product as conformant to the requirements of FIPS 201.

4.1 Requirements

The following table provides a reference to the requirements that need to be electronically tested within the Lab as outlined in the Approval Procedure for the Product. The different test cases that are used to check compliance to the requirements is also cross-referenced in the table below.

Identifier #	Requirement Description	Source	Test Case #
SLV.1	Agencies may choose to deploy PIV Cards with electromagnetically opaque holders or other technology to protect against any unauthorized contactless access to information stored on a PIV Card.	FIPS 201-2, Section 2.11	SLV-TP.1

Table 3 – Test Procedure: Applicable Requirements

4.2 Test Components

Table 4 provides the details of all the components required by the Lab to execute this test procedure. Based on the different test cases, different components may be required to execute different test cases.

#	Component	Component Details	Identifier
1	Computer host	A Workstation with the appropriate drivers for the CLREADER	HOST
2	Contactless PIV Card Reader	HID multiclass RP10 contactless smart card reader	CLREADER
3	PIV Card	NIST PIV Test Card 1	PCARD
4	The Electromagnetically Opaque Sleeve under test	-	PROD
5	A metric ruler longer than 10 centimeters	-	RULER

Table 4 - Test Procedure: Components

4.3 Test Cases

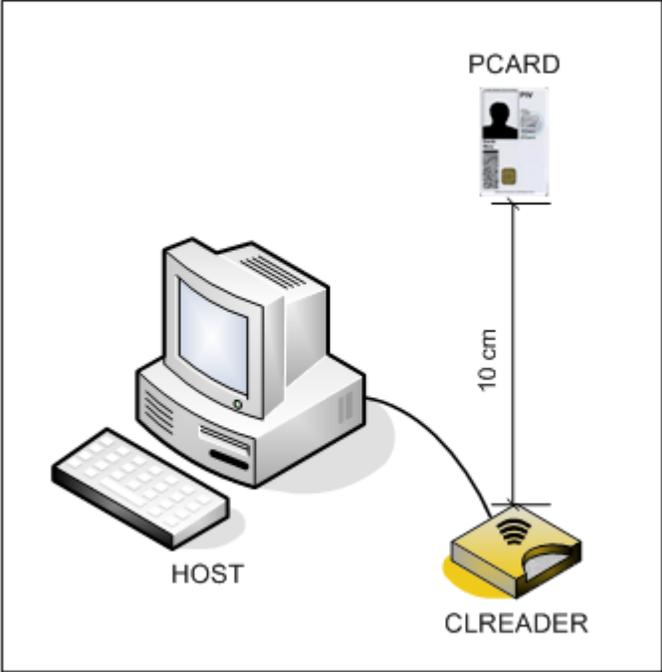
This section discusses the various test cases that are needed to test the Product against the requirements mentioned above.

4.3.1 Test Case SLV-TP.1

4.3.1.1 Purpose

The purpose of this test is to verify that the electromagnetically opaque sleeve shields the PIV Card from radio frequency signals transmitted by the reader at 13.56 MHz \pm 7 KHz frequency range.

4.3.1.2 Test Setup

Equipment :	The following components are necessary for executing this test case: <ul style="list-style-type: none">▪ HOST▪ CLREADER▪ PCARD▪ PROD▪ RULER
Configuration Diagram :	 <p>The diagram shows a desktop computer system labeled 'HOST' connected to a yellow device labeled 'CLREADER'. A 'PCARD' is positioned above the CLREADER, with a vertical line indicating a distance of '10 cm' between the card and the device. The entire setup is enclosed in a rectangular frame.</p>
Preparation:	<ul style="list-style-type: none">▪ Connect the CLREADER into the appropriate port of the HOST.▪ Verify that the CLREADER is correctly installed by reviewing its presence in the list of hardware using the device manager of the host system.

4.3.1.3 Test Process

Test Steps:	<ol style="list-style-type: none"> 1. Bring the PCARD within 10 centimeters of the CLREADER. (Make sure the distance is measured with RULER) 2. Verify that the CLREADER produces an audible sound indicating detection of a card in the field. 3. Place the PCARD inside the PROD. 4. Hold the PCARD at a 10 cm distance (use RULER to verify the distance) and then gradually bring it closer to the CLREADER until it touches it. Verify that the CLREADER does not produce an audible sound indicating detection of a card in the field. Perform this test with the PROD in eight (8) different orientations as follows: <ol style="list-style-type: none"> a. Card flat against and <i>facing toward</i> the reader at angles of 0, 90, 180 and 270 degrees of rotation¹. (<i>Note: For Display shields this corresponds to the card being closer to the reader than the shielding material.</i>) b. Card flat against and <i>facing away from</i> the reader at angles of 0, 90, 180 and 270 degrees of rotation. (<i>Note: For Display shields this corresponds to the shielding material being between the reader and the card.</i>)
Expected Result(s):	<ol style="list-style-type: none"> 1. The PCARD will respond when it is within proximity (less than 10 centimeters) of the CLREADER when the PCARD is not in the PROD. In this case, data is successfully read from the contactless interface of PCARD. 2. The PCARD will not respond to the CLREADER when it is inside the PROD for any of the orientations, at any distance from the reader

¹ These rotation angles will result in the photograph being at the top, right, bottom and left of the reader, respectively.